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Preliminary Close Out Report

J. H. Baxter Superfund Site

Weed, California

Preliminary Close Out Report for J.H. Baxter Superfund Site, Weed, California

1.0 Introduction

This Preliminary Close Out Report (PCOR) documents the completion of remedial action construction and related activities for the J.H. Baxter Site (Site), U.S. Environmental Protection Agency (EPA) Site identification number CAD000625731, in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A, January 2000). EPA conducted a pre-final inspection on August 29, 2001 to verify that the potentially responsible parties (PRPs) have constructed the remedial actions portion of the remedy in accordance with remedial design (RD) plans and specifications. The PRPs have initiated all activities necessary to achieve ROD performance standards and site completion.

2.0 Summary of Site Conditions

2.1 Background

2.1.1 Location and Geography

The Site is located in the northeastern portion of the city of Weed in Siskiyou County, California, and includes properties owned by J. H. Baxter and Roseburg Forest Products. The Site is bordered on the northwest by residential areas of Weed, to the north by the Angel Valley Subdivision and Lincoln Park, to the east by mixed woodlands, and to the south by irrigated pasture. Beaughton Creek runs through the eastern portion of the Site.

Regional physiographic features include Shasta Valley, Mount Shasta, Mount Shastina, and Black Butte. The Site is underlained by coalescent fans of pyroclastic, mudflow, glacial and fluvial deposits off the northwestern flank of Mount Shasta and Mount Shastina. The water table is shallow (0-10 feet below the ground surface), emergent in some areas of the Site, and exhibits fluctuation with recharge conditions due to rainfall and snow melt (EPA, 1990).

The Site area sits at an elevation of 3,400 feet above sea level. The Site area receives most of its average 27 inches of precipitation per year during the winter as rain and snow. Temperatures in the Site area are generally quite warm in the summer (daytime average of 90° F) and cold in the winter (daytime average of 32° F). Prevailing winds are from the north at 320 degrees and from the southeast at 120 degrees. Winds can gust to speeds in excess of 50 miles per hour from the south (EPA, 1990).

Man-made and natural wetlands exist within the Site boundaries. Only man-made wetlands have been affected by contamination. Man-made wetlands consist of irrigated pasture, Roseburg excavation pond and wet areas created by discharges from the Roseburg power plant (EPA, 1990). The Roseburg excavation was partially filled and graded as part of the 1999 construction, but a wet area still persists to the north of the backfilled area. Also in 1999 a sprinkler system that discharges

treated water from the J.H. Baxter water treatment plant was added to the south pasture as a wetlands mitigation measure.

2.1.2 Site History

Wood treatment operations using chemicals to preserve lumber products were initiated at the Site in 1937. The complete history of chemicals used in the early years of operation is not known. Tanalith and Minalith were used in treatment processes until the mid-1950s. Tanalith is a mixture of sodium fluoride, sodium dichromate, arsenic, and dinitrophenol. Minalith is a mixture of diammonium phosphate, ammonium sulfate, sodium tetraborate and boric acid. A fluoride-chrome-arsenicphenol mixture (FCAP) is reported to also have been used. In the late 1960s, the use of chromated zinc chloride was removed from the onsite wood treatment process. Ammoniacal copper arsenate (ACA) was also used as a preservative.

Reports indicated that pentachlorophenol (PCP) was used for wood treatment at least as far back as the 1950s, and until 1982. During this period of use, PCP was applied to wood in an oil-based mixture. Commercial grades of pentachlorophenol manufactured during this period contained various isomers of chlorinated dibenzo-dioxins and dibenzo-furans.

Additional chemicals used by J.H. Baxter Company from the beginning of its wood treatment operations in 1962 through the current operations of the treatment facility include ammonical copper-zinc-arsenate (ACZA), creosote 50/50 (a 50:50 petroleum creosote mixture), D-blaze, and pyresote. Pyresote, a flame retardant, is a mixture of zinc chloride, sodium dichromate, ammonium sulfate, and boric acid.

Waste disposal, handling, and discharge practices over the 50 years of plant operations have resulted in Site soil, groundwater, and surface water contamination by chemicals described in the previous paragraphs. Waste generated at the Site include retort drippings, tank and retort sledges, process water, wastewater, drying area drippings, storage area drippings, empty containers, and spilled raw preservative compounds. Prior to 1983, when the facility was ordered to cease its waste disposal practices by the North Coast Regional Water Quality Control Board (NCRWQCB), waste management involved onsite disposal and discharge, spray irrigation of waste water on Site, storage in ponds and tanks onsite, and possible disposal of sledges into a local landfill. Discharge of wastewater into the bermed area around the 500,000 gallon tank was also reported. Leakage from storage tanks may also have contributed to subsurface contamination.

2.1.3 Site Chronology

The following is a chronology of important Site activities and investigations by J.H. Baxter, International Paper (IP), and Roseburg, state agencies, and EPA.

March 1982. North Coast Regional Quality Control Board (NCRWQCB) inspected J.H. Baxter and requested a report of waste discharge.

November 1982. California Department of Health Services (DHS)[currently Department of Toxic Substance Control (DTSC)] inspected J.H. Baxter and reported improper handling and storage of wastes.

December 1982. DHS required J.H. Baxter to begin a surface and groundwater monitoring program.

March 1983. Elevated levels of arsenic, creosote, and pentachlorophenol were discovered by DHS and NCRWQCB in Site soils, surface water runoff, and groundwater. Additional soil samples collected in Lincoln Park also showed elevated arsenic. The NCRWQCB issued Cleanup and Abatement Order to J.H. Baxter to cease waste disposal practices.

March 1983. J. H. Baxter installed two monitor wells at the request of DHS and NCRWQCB. Results showed elevated levels of wood treatment chemicals in groundwater.

April 1983. Siskiyou County Health Department temporarily closed Lincoln Park to evaluate soil contamination results.

May 1983. NCRWQCB sampled soil, sediment, and surface water within Lincoln Park, the drainage through the park, and on J.H. Baxter property. Results showed that a discharge was occurring and the NCRWQCB issued a Cease and Desist order to J.H. Baxter.

July 1983. J. H. Baxter sampled soil within its sprayed field and reported elevated arsenic.

September 1983. DHS cited J.H. Baxter for violation of an interim hazardous waste facility permit and the State Hazardous Waste Control Laws.

January 1984. NCRWQCB advised J.H. Baxter of continued non-compliance with existing orders.

February to September 1984. NCRWQCB and DHS met with J.H. Baxter regarding remedial investigations and waste discharge requirements.

July 1985. DHS held public meetings to discuss addition of the Site to the State Superfund List.

September 1985. The NCRWQCB issued Cease and Desist Orders to J.H. Baxter, IP, and Roseburg requiring that the companies submit a plan for investigating and cleaning up groundwater and surface water.

December 1985. NCRWQCB issued Cease and Desist Orders to J.H. Baxter, IP, and Roseburg to implement investigation work plan.

January 1986. Site formally included on State's Priority Ranking List.

January 1986. EPA became the lead agency for Site remedial studies and enforcement.

January to September 1986. EPA attempted to negotiate a consent decree with the PRPs for the conducting of the remedial investigation/feasibility study (RI/FS).

September 1986. Consent Decree negotiations failed and EPA prepared for EPA-lead RI/FS.

March 1987. EPA initiated a Remedial Investigation (RI). The RI Report was released in January 1989.

Late 1987 to Early 1988. The California Department of Fish and Game conducted a fisheries study of Beaughton Creek above and below the Site. The Fish and Game reported that discharges from the Site had adversely affected aquatic life downstream of the Site.

December 1988. NCRWQCB issued Cease and Desist orders to J.H. Baxter and Roseburg to address surface runoff violations. Cleanup and Abatement Orders issued to IP to implement groundwater remediation program.

May 1989. NCRWQCB issued Waste Discharge Requirements to J.H. Baxter, IP, and Roseburg for groundwater biological treatment feasibility study.

October 1989. The J.H. Baxter/IP/Roseburg Site was added to the National Priorities List (NPL).

April 1990. EPA's Draft Feasibility Study and Proposed Plan were released.

September 1990. EPA's ROD was released.

August 1991. EPA issued Unilateral Administrative Order 91-92 (UAO) with a Scope of Work (SOW) that detailed the remedial actions to be conducted at the Site.

May 1997. EPA completed the Final Feasibility Study to re-evaluate the cleanup requirements for groundwater and soils contaminated with dense non-aqueous phase liquids (DNAPLs).

March 1998. EPA released ROD Amendment No. 1 that identified the zone of where compliance with ROD standards was technically impracticable (TI Zone), and included a slurry wall to contain water and soil within the TI zone. The ROD also designated the slurry wall, the RCRA-equivalent disposal cell, and areas designated by EPA for treatment of soil prior to disposal in Corrective Action Management Units (CAMUs).

March 1999. Pre-final inspection for bioventing system. Bioventing system for Area B soils is constructionally complete and operational.

Construction Season 1999. Slurry wall construction, water treatment plant modifications and related activities.

February 2000. Pre-construction meeting for Resource Conservation and Recovery Act (RCRA) equivalent disposal cell part of the selected remedy.

Construction Season 2000. RCRA-equivalent disposal cell construction, asphalt cap, and related activities. No pre-final construction meeting of RCRA-equivalent disposal cell due to landfarmed soils (Referred to as Component 3A soils in Table 9-1 of the ROD Amendment) not meeting ROD Amendment treatment standards.

Construction Season 2001. Component 3A soil added to RCRA-equivalent disposal cell and final construction activities.

August 2001. EPA performs pre-final inspection of Site to verify that construction is complete and meets ROD standards and requirements.

August/September 2001. EPA releases the Explanation of Significant Difference (ESD) that revised the treatment standards for 3A soils to allow the placement of those soils in the RCRA-equivalent disposal cell, designated as a Corrective Action Management Unit (CAMU). EPA conducted pre-final inspection on August 29, 2001.

2.1.3 Site Discovery and Remedial Activities

This section has been excerpted from the *J.H. Baxter Superfund Site Final Focused Feasibility Study and Evaluation of Technical Impracticability* (FFS) (Bechtel Environmental, May 1997).

Wood treatment operations at the Site were initiated in 1937. Waste disposal, handling, and discharge practices over more than 55 years of operation at the Site have released wood treatment-related hazardous substances to Site soil, ground water, and surface water. Wastes generated at the Site include retort drippings, tank and retort sledges, process water, wastewater, drying area drippings, storage area drippings, empty containers, and spilled raw preservative compounds.

Tank Berm Area Around the 500,000-Gallon (No. 3) Tank - A 500,000-gallon tank was installed in 1936 to store creosote. Spills of creosote from the tank have been reported historically. The RI report also noted that not any attempts were made to cleanup early spills and creosote was allowed to seep into the ground. The tank was converted to a process-water surge tank in 1983.

The bermed area was reported to have received water from process waste water vaults and process water. This area was reported to have been used for disposal of sledges from storage and process tanks. Sludges were removed from the bermed area in 1985, however, contaminated soils remain.

Retort and Process Area - Several leaks and direct discharges of wood treatment chemicals from the process area onto the western portion of the property have been reported from the 1940s through 1970s. An underground tank also existed below the retorts, which at one time received used treatment solutions. This underground tank was reported to have been filled with groundwater before it was closed.

Buried Pond Area - Unlined settling ponds and pits containing wood treatment salts, and dip ponds containing creosote were reported to have been present at the north end of the wood treatment property near the Roseburg excavation of 1999. These ponds and pits received excess treatment chemicals from the retorts, and were used by local residents to dip fence posts. It is thought that these unlined ponds and pits probably contributed to the presence of creosote observed within the Roseburg excavation of 1999.

Former Oil Water Separator/Creosote Pit Area - An oil/water separator was installed at the J.H. Baxter property in 1955 to recover creosote product. Discharges and oil spills from the unit were reported as well as a leak in the inlet pipe. The oil/water separator was taken out of service in 1984.

During the 1960s, J.H. Baxter plant's sewage system and wastewater from the retorts drained into IP's log ponds. To reduce this drainage, J.H. Baxter dug a pit to contain 500 cubic feet of waste, however, overflows from the pit and oil/water separator continued to discharge into the log ponds. The pit was closed and filled in 1981. J.H. Baxter, at a later date, also cleaned the ditch that discharged into the pond. The ditch was filled with soil and a culvert was installed.

Former Waste Water Vaults - Two concrete-lined vaults were used to hold wastewater from oil and water-based chemical solutions, condenser water, cooling water, spillage drainage, wash water from retorts, and runoff. These wastewater vaults were used during the period of 1975 to 1984/85; they were decommissioned at the latter date.

From 1975 to 1983, water entering the wastewater vaults was piped to irrigation sprinklers and sprayed onto an open field adjacent to the southern edge of the facility. Excess water was reported to have been discharged into Site culverts, the tank berm area, and directly onto the ground surface when the capacity of the spray system was exceeded.

The process of transferring wood treatment related chemicals from rail tank cars to facility storage vessels was also reported as a source of spills at the Site. Several miscellaneous reports noted spills of chemicals during unloading of the rail tank cars in the 1950s. There are also reports of leaks of chemicals from failing transfer hoses, and the loss of creosote from a tank car.

2.1.4 Remedies Selected

This section presents a summary of the remedies selected for the Site and an overview of ROD and post-ROD activities. The document that governs these activities is the UAO for Remedial Action (RA) at the J.H. Baxter Site.

Summary of 1990 ROD

The response actions selected by the 1990 ROD address the documented principle public health and environmental threats from the Site contamination. Actions were selected to address the contaminated soils, groundwater, and surface water. The major components of the selected remedy include the following:

- Extraction of the contaminated groundwater followed by biological treatment and chemical precipitation, polishing, and disposal. The preferred disposal method for the treated groundwater was to reuse on the Roseburg log decks. Other disposal options included: re-injection to groundwater, release to subsurface drains or trenches, industrial process use, and/or disposal to percolation ponds .
- Excavation of the organic contaminated soils and biological treatment in lined treatment cells with onsite disposal after treatment in a lined RCRA-equivalent disposal cell.
- Excavation of the inorganic soils and chemical fixation followed by onsite disposal in RCRA-equivalent disposal cells for treated soils designated as hazardous waste.
- Excavation of the combined organic/inorganic soils, biological treatment in treatment cells, chemical fixation, and onsite disposal into a lined RCRA-equivalent disposal cell.

Post-ROD Investigations

Since the 1990 Feasibility Study was prepared and the ROD was issued, a significant amount of additional data have been obtained through further investigation and characterization work conducted at the Site. The additional data have contributed to a better understanding of the extent of contamination, especially the DNAPLs in the subsurface.

During post-ROD groundwater remedial design characterization, the Weed Remediation Group (WRG) issued the Characterization and Treatability Study (C&TS) (Grant, 1993). EPA instructed the WRG to better define the extent of DNAPLs in the saturated and unsaturated (vadose) zone soils. The WRG addressed the DNAPLs extent in the Revised Groundwater Remedial Design Investigation Report (GWRDI) issued in February 1995 (Grant, 1995). The GWRDI report noted a significant increases in the estimated volume of contaminated soil over the ROD estimate. The ROD estimated that 41,000 cubic yards of contaminated soil was subject to cleanup. The post-ROD investigations estimated 201,500 cubic yards of impacted soil in the unsaturated zone.

Summary of ROD Amendment

The ROD Amendment, signed in 1998, documents a waiver of the groundwater of the groundwater cleanup standards set forth in the 1990 ROD, based on the technical impracticability from an engineering perspective for the DNAPLs Zone. The components of the ROD Amendment include:

- Bioventing of Area B soils (completed prior to slurry wall construction)
- Construction of a slurry wall to contain DNAPLs in the vadose zone and related activities
- Construction of a RCRA-equivalent disposal cell and related activities

2.2 Remedial Construction Activities

In response to the 1990 ROD and 1998 ROD Amendment, construction activities started on the Site. The first remedy under construction was the Area B soils, which was initiated in October 1998.

2.2.1 Area B Bioventing

Area B soils are contaminated with organics and are believed to have been excavated from the DNAPLs Zone and moved to their current location during the construction of a building at the Site. As described in the ROD Amendment, soil conditions in Area B were not specifically addressed in the initial ROD. The Area B soils contain elevated levels of both non-carcinogenic and potentially carcinogenic polycyclic aromatic hydrocarbons. The ROD Amendment selected evaluation of in-situ

bioventing as the remedial technology for Area B. The Area B soils were covered with two feet of clean soil and in-situ biotreating using bioventing is on going as specified by the ROD Amendment.

The Area B bioventing system was constructed between October 1998 and March 1999 and was turned on in March 1999. The pre-final inspection for the bioventing system was in March 1999. EPA verified that construction met all standards and requirements. EPA's oversight of the Area B bioventing system is currently performed by EPA's Quality Assurance (QA) contractor and the PRPs to verify that the system is being operated and maintained in accordance with the guidelines provided in the *Draft Technical Memorandum; 100% Remedial Design; Proposed Bioventing System; Area B Soils* (TRC, May 1998). TRC is the PRP's environmental engineering consultant. Table 1 provides a summary of the components associated with the Area B Bioventing Program.

TABLE 1
Summary of Area B Bioventing Components
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Activity	Summary of Components
Area B Bioventing System	Constructed access road Installed 4,800 feet of horizontal biovent wells at 41 locations Installed 15 vertical monitoring wells Connected horizontal wells to 2 to 500 standard cubic feet per minute blowers covered with two feet of clean soil Pre-final Inspection Initiated system operation

2.2.2 Slurry Wall and Related Activities

Slurry wall construction and related activities took place between March and October 1999. The pre-construction meeting was on February 15, 1999.

There are 2 main advantages to the use of slurry wall technology at the Site (TRC, May 1996):

1. It prevents DNAPL constituent migration by containing the source of dissolved DNAPL constituents, which enhances the restoration of the aquifer outside the slurry wall.

2. It reduces the required total groundwater extraction rate outside the slurry wall, which reduces the treatment plant capacity requirement and the period over which ground water extraction outside of the slurry wall would be required.

Contaminants of concern in groundwater include arsenic, carcinogenic PAHs, PCP, and dioxin. Table 2 presents a summary of these activities. All construction activities were observed on a weekly basis or as needed by EPA and the EPA's oversight contractor, CH2M HILL.

TABLE 2
Summary of Slurry Wall Components and Related Activities
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Activity	Summary of Components
Slurry Wall and Gravel Drainage Trench	4,377-foot-long slurry wall Slurry wall depth from 27 to 52 feet Older Clastic Assemblage (aquitard/key) identified over entire length Slurry wall backfill average permeability = 1.8×10^{-8} cm/sec Soil-cement-bentonite under railroad tracks Roseburg Tower underpinned

TABLE 2
Summary of Slurry Wall Components and Related Activities
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Activity	Summary of Components
	3,450-foot-long gravel drainage trench Gravel drainage trench used bio-polymer slurry technique 5 piezometers set in gravel drainage trench (GT-1 through 5) Capping for existing or future use (soil/gravel/AC)
Extraction Wells and Pipelines	7 north extraction wells (north of log deck) 6 west extraction wells (west/Roseburg operations area) 4 south extraction wells (inside slurry wall/Roseburg excavation area) Tie-in to existing pipelines Pipe to Roseburg or J.H. Baxter Water Treatment Plants Metals or organics line option Electric pumps/level controls
Piezometers	4 north extraction wells piezometers (CZP-7 through 10) 6 west extraction wells piezometers (CZP-1 through 6) 2 slurry wall gradient piezometers (P-1 and P-2)
Surface Soil Excavation and Staging (Partial)	Surface soils in slurry wall alignment excavated 9 excavation units completed Surface soil testing Staging area constructed w/ liner and drain/sump Staging area cover
Water Treatment Improvements	Expand treatment plant throughput capacity from 45 gpm to 130 gpm Improvements to sprinkler system Install pipeline to Roseburg ponds
Landfarming	Tilling and watering of remaining soil was performed and is ongoing by J. H. Baxter. Soils placed in RCRA-equivalent disposal cell, a CAMU.
Storm- and Surface-water Improvements	Drainage improvements along northern portion of the slurry wall to contain sprinkler water Drainage improvements around J.H. Baxter drip pads Cleaned storm water holding pond Grading along southern and western portions of J.H. Baxter property Construction of 800,000 gallon stormwater pond
Wetlands Mitigation	Installed sprinklers to deliver treated water to the south pasture
Filling of DNAPLs Seeps (Filling and Grading Roseburg Excavation)	Spoils, oversized material, and other unusable material (all uncontaminated) were used to fill the onsite DNAPLs seeps identified in the Roseburg Excavation. The DNAPLs seeps were covered and surrounded by the slurry wall as designed.
Ditch Improvements	Expanded the storage and flow capacity of the south pasture drainage

The pre-final Site inspection of the slurry wall portion of the remedial design was performed on August 26, 1999. The punch list presented at that meeting is included as Table 3.

TABLE 3
Minor "Punch List"
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Block One	Description
A	Slurry Wall and Gravel Drainage Trench Set Settlement Monument Benchmarks Backfill J.H. Baxter tram tracks Repair AC cap pavement (settlement) over GDT in NE corner
B	Ground Water Extraction Wells and Pipelines Fix NEW-4 vault lid Reinforce WEW-10 vault/lid Re-set level probes in SEW-8
C	Ground Water Piezometers None
D	Surface Soil Excavation (Partial) and Staging Evaluate Dioxin/Furan sampling results
E	Treated Ground Water Disposal Install new pump motor and impeller for sprinkler system
F	General Extend MW B-14S and MW B-14D Replace monuments on MW B-12S and MW B-12D Clean sediment from J.H. Baxter basin Excavate sediment basin/sump near J.H. Baxter Site entrance

The extraction well system was fully operational in December 1999 (All punch list items were addressed). It is anticipated that this system (within the slurry wall) will continue to operate indefinitely. EPA has approved the long-term operations and maintenance plan prepared by the PRP's consultant, TRC, *Operations and Maintenance Plan - Ground Water/Slurry Wall Remediation System* (TRC, 1999b).

2.2.3 RCRA-Equivalent Disposal Cell and Related Activities

Construction of the RCRA-equivalent soil cell and related activities took place between February 2000 and August 2001. Activities included construction of the RCRA-equivalent disposal cell, excavation, treatment (fixation and further landfarming), installation of the asphalt cap, construction of storm ponds, and abandonment of select wells and piezometers. Activities are summarized in Table 4. All construction activities were observed on a weekly basis or as needed by EPA and the EPA's oversight contractor, CH2M HILL.

TABLE 4
Summary of Surface Soils Remediation and Related Activities
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Activity	Summary of Components
Surface Soils Excavation	Construct and dismantle fixation cell, dismantle staging cells Locate and protect utilities and pipelines Excavate excavation units (EU) No. 10 through 34 Sample and analyze soils from EUs (sidewall and bottom) and below staging cells Backfill and grade EU areas Place excavated soils in RCRA-equivalent disposal cell Empty and crush drums from previous exploration activities and place in RCRA-equivalent disposal cell Fix soil from EU-6 (1A) and EU-14 (3A) in RCRA-equivalent disposal cell Air monitoring—personal and perimeter
South Pasture Dutch Re-alignment	Grade existing south ditch to enlarge and re-align Line curves and inlets with riprap for erosion protection
RCRA-Equivalent Disposal Cell	Abandon domestic water well in location of disposal cell Remove drums and debris from disposal cell construction area Clear, grub, and proof-roll RCRA-equivalent disposal cell construction area Install RCRA-equivalent disposal cell sub-drain Place, grade and compact RCRA-equivalent disposal cell structural fill Place, grade, and compact structural fill for RCRA-equivalent disposal cell berms Install vadose zone leak detection system (LDS), leachate collection removal system (LCRS) piping, sumps, and monitoring pipes Install multiple layer, geosynthetic liner Install 2-feet operational layer of affected soils Install multiple layer, geosynthetic cover Place, grade, and compact 2-foot thick vegetative soil cover Hydroseed RCRA-equivalent disposal cell Install RCRA-equivalent disposal cell drainage features
Stormwater Ponds and Collection System	Relocate utility poles at Stormwater Ponds 2 and 3 Excavate and construct Stormwater Pond 2 and 3 including 60 mil high density polyethylene (HDPE) liner Install transfer pump and piping at Pond 2 Excavate affected concrete and soils at Stormwater Pond 3 Construct Stormwater Pond 3, including 60 mil HDPE liner Install transfer pump and double contained transfer piping at Pond 3 Install backup generator set for transfer pumps Install security fencing around Stormwater Ponds 2 and 3 Construct new decontamination pad near Baxter maintenance shop Install 25 stormwater catch basins and 2,700 feet of storm drain collection piping
General Grading, Drainage, Surfacing and Security	Remove existing asphalt surface at west end of Baxter property Place, fill, and grade at far east and west ends of Baxter property (not affected by surface contamination) Grade backfill in areas excavated for affected soils Remove and replace Baxter tram tracks Place and compact aggregate base (AB) rock for asphalt concrete wearing surface Install 14 acres asphalt concrete (AC) wearing surface Install gravel wearing surface at south side of Baxter property Install surface drainage features Install wood post fence along north side of Baxter property

Pre-final inspection of the RCRA-equivalent disposal cell and other activities summarized in Table 4 took place on August 29, 2001. All elements of the remedy were found to be constructed in accordance with ROD standards and requirements. Long term operation and maintenance of this

portion of the remedy will be carried out in accordance with the plan generated by TRC, *Draft Postclosure Operations and Maintenance Plan - Surface Soils, Area B and Ditch Sediments* (TRC, 1999b). The "minor" punch list presented at the August 29, 2001 meeting is included as Table 5.

TABLE 5
Minor "Punch List"
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Block Four	Description
A	Complete placement and grading of topsoil on RCRA-equivalent disposal cell
B	Hydroseed top of RCRA-equivalent disposal cell
C	Complete sub-grade on southern gravel surface area
D	Install bollards around fire hydrant at south end of Site
E	Plant trees at southern boundary of RCRA-equivalent disposal cell

All minor "punch list" items in Table 5 were by competed by September 10, 2001. The components of the RCRA-equivalent disposal cell will be monitored quarterly.

2.2.4 Institutional Controls

Institutional Controls will be implemented to protect the RCRA-equivalent disposal cell, slurry wall, and asphalt cap and prevent future exposure to waste in the RCRA-equivalent disposal cell or in the DNAPL zone. These controls include:

- Limiting future land uses to appropriate industrial uses;
- Restricting access to and use of contaminated groundwater;
- Prohibiting activities that would disturb the integrity of the remedy, including appropriate prohibitions on activities that would disturb the soil and/or any cap placed upon such soil;
- Requiring appropriate handling of excavated materials;
- Providing for appropriate notice (in land records and otherwise) that hazardous wastes remain onsite; and
- Prohibiting other activities that could cause a potential threat to human health or the environment.

Institutional Controls will be put in place by EPA, NCRWQCB, and DTSC. DTSC will take the lead.

3.0 Demonstration of Cleanup Activity QA/QC

Activities at the Site were performed in accordance with the requirements of the RD/RA and with design plans and specifications. The RD Report includes a Quality Assurance Project Plan (QAPP) that incorporates EPA quality assurance and quality control (QA/QC) procedures and protocol. EPA analytical methods were used for all samples collected during RA activities and for data validation. A report including the details of soil, water, and air samples was prepared by TRC (the PRP's consultant) and submitted to EPA in November 1999 (TRC, 1999e). All construction activities were overseen by EPA and EPA's consultant, CH2M HILL on a weekly basis or as needed.

A complete data report documenting all procedures used to verify that construction was performed in accordance with approved specifications and ROD standards and requirements was prepared by TRC and submitted to EPA in November 1999 (TRC, 1999c-g).

a. *Construction Quality Assurance Report, Slurry Wall and Gravel Drainage Trench, Block 1.* Volumes 1 and 2.

b. *Construction Quality Assurance Report, Ground Water Extraction Wells and Pipelines, Block 2.*

c. *Construction Quality Assurance Report, Ground Water Piezometers, Block 3.*

d. *Construction Quality Assurance Report, Excavation of Surface Soils and Staging Cell Construction, Block 4.*

e. *Construction Quality Assurance Report, Ground Water Treatment and Disposal Systems, Block 5.*

Health and safety protocols were performed in accordance with the Site Health and Safety Plan (URSGWC, 1999). Monitoring of health and safety was performed by URSGWC and is summarized in *Construction Quality Assurance Excavation of Surface Soils and Staging Cell Construction Report, Block 4* (TRC, 1999f), submitted to EPA in November 1999.

Performance and operational monitoring are performed for the systems in place at the site. Performance monitoring is used to determine how well the system is remediating the soils and is described in the *Monitoring Confirmation Sampling Plan; Surface Soils, Area B and Ditch Sediments* (TRC, May 1998). Operational monitoring is used to assure proper operation and to determine optimal system configurations and is described in the operational and maintenance plans for the Site.

Area B bioventing, which was constructed at twice the capacity by the WRG, has shown in technical memorandums to EPA, an increased level of oxygen concentration in the soils of this area. Methane concentrations levels which are indicative of anaerobic metabolism are low, and carbon dioxide levels are high. These results are an indication the Area B bioventing system is working; biodegradation is occurring, and no further action is required in this area of the Site.

The slurry wall was constructed 27 to 52 feet below surface with bentonite soil backfill. The slurry wall system is constructed with two groundwater extraction systems: interior of slurry wall and exterior of slurry wall. Groundwater extracted from both systems is piped to the J. H. Baxter water treatment plant. The J. H. Baxter water treatment plant consists of zones which separate and treat the specific constituents of the Site. The J. H. Baxter water treatment plant consists of the following components: an oil water separator, a biological treatment system, a chemical precipitation unit, and an activated carbon polishing system. Monitoring/confirmation requirements for the J. H. Baxter water treatment plant is effluent monitoring. The effluent monitoring is required to confirm that the treatment process has sufficiently achieved the ROD and ROD amendment treatment standards.

Quarterly reports on the groundwater slurry wall remediation system effectiveness, illustrates an inward gradient has generally been established in 4 of the six monitoring well pairs along the inside slurry wall circumference. Outside the slurry wall, groundwater capture of all potentially contaminated groundwater has been achieved. Quarterly monitoring of the groundwater slurry wall remediation system effectiveness will continue.

The RCRA-equivalent disposal cell, designated a CAMU, includes: a liner, leachate collection and removal system, a cover system, stormwater runoff controls, and utilities. The leachate collection

system will be monitored quarterly. The RCRA-equivalent disposal cell is built with the strict RCRA requirements.

EPA has concurred all systems are working and the remedies in place will meet the ROD and ROD Amendment goals with no further construction action at the site. Regular monitoring of the systems at the Site will continue.

The QA/QC program used throughout the RA was rigorous and in conformance with EPA and State standards; therefore, EPA and the State have determined that all analytical results are accurate to the degree needed to assure satisfactory execution of the RA, consistent with the ROD, ROD Amendment, and RD plans and specifications.

4.0 Activities and Schedules for Site Completion

EPA has approved the following operations and maintenance plans for the systems in place at the Site: *Draft Operations and Maintenance Plan - Ground Water / Slurry Wall Remediation System* (TRC, February 1999) and *Draft Postclosure Operations and Maintenance Plan Surface Soils, Area B and Ditch Sediments* (TRC, June 1998). The systems were declared functional in August 1999.

The RA activities that remain to be completed for the J. H. Baxter site are summarized below in Table 6. The RA activities will be completed according to the schedule, also given in the table. In addition, EPA will prepare a Five-Year Review Report. Details are given in the following section.

TABLE 6
Completion Schedule
Preliminary Close Out Report, J.H. Baxter Site, Weed, California

Task	Estimated Date of Completion	Responsible Organization
Evaluation of Area B Bioventing	March 2002	WRG
Evaluation of Area B Bioventing	March 2004	WRG
Second Five Year Review Prepare	July 2005	EPA
Continue ground water pump and treat to maintain hydraulic control on the Site, continue bioventing	December 2010	WRG
Prepare Final Close Out Report	June 2011	EPA
Deletion from NPL	September 2012	EPA

5.0 Remedial Construction Costs

The RCRA-equivalent disposal cell was completed and filled in August 2001. The pre-final construction meeting took place onsite on August 29, 2001. The total estimated cost of the selected remedy is $20,000,000. The total estimated cost can be divided into four components: (1) the groundwater slurry wall remediation system cost was approximately $4 million; (2) the cleanup of surface soil and ditch sediments cost is $7.5 million; (3) the present worth of 30 years of operation and management is estimated to be $8 million; (4) the construction cost for the bioventing component was approximately $500,000. EPA's oversight costs billed to date are approximately $1.5 million.

6.0 Five-Year Review

A Five-Year Review, dated July 7, 2000, has been prepared for this Site. The aforementioned Five-Year Review concluded that the remedy for this site remains protective of human health and the environment. The next Five-Year Review will be prepared five years from the date of the aforementioned review.

7.0 Works Cited

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TRC. 1999c. *Construction Quality Assurance Report, Slurry Wall and Gravel Drainage Trench, Block 1.* Volumes 1 and 2. Prepared for Weed Remediation Group. November.

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TRC. 1999e. *Construction Quality Assurance Report, Ground Water Piezometers, Block 3.* Prepared for Weed Remediation Group. November.

TRC. 1999f. *Construction Quality Assurance Report, Excavation of Surface Soils and Staging Cell Construction, Block 4.* Prepared for Weed Remediation Group. November.

TRC. 1999g. *Construction Quality Assurance Report, Ground Water Treatment and Disposal Systems, Block 5.* Prepared for Weed Remediation Group. November.

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